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COOP'S TECHNOLOGY DIGEST

-A Timely Report On The *World* Of Communications-

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COOP'S TECHNOLOGY DIGEST

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STAR TV WANTS TO PUT YOU IN THE CABLE TV BUSINESS

There are four basic elements in any plan to build a cable television system:

1) Access to desirable "software" (i.e., television programming not available on Free-To-Air television);

2) The appropriate equipment to build a cost effective system and the common sense to follow appropriate standards of good engineering practice in constructing the system;

3) The good business sense to approach the cable television system investment as a long term return activity, and the intelligence to not expect to be self sustaining prematurely ... and the financial ability to make the programme work;

4) The necessary national, local permits to construct the cable system within the guidelines of regulations.

STAR TV is today a combination of free-to-air and viewer-choice (optional for fee payment) programming distributed on AsiaSat 1 (105.5E). The footprint of AsiaSat 1 covers the primary population areas of Asia from the equatorial regions north to the frozen north regions of Central CIS (USSR). AsiaSat tells you their satellite footprints reach more than 60% of the world's population. STAR TV is one of several users of AsiaSat 1, but the only user to combine multiple channels of "broadcast television" in multiple languages (English, Mandarin and Hindi) into a "marketing package" designed to attract viewers. STAR claims to reach 54,000,000 Asian households with a potential viewing audience of 200,000,000 people (1 November 1994) and their growth "potential" is far greater yet; two billion people could be watching STAR TV.

STAR TV is a Rupert Murdoch investment and it follows in the established format of a similar (STAR) operation in Europe. Murdoch and his people believe it is absolutely essential that viewers have free-to-air services initially as a means of encouraging the sale of DTH (home dish) systems. To support the free-to-air services, STAR TV sells advertising like any commercial telecaster. Unlike any other commercial telecaster, STAR reaches 53 separate countries in Asia alone.

To help encourage and support the sale of DTH and SMATV (satellite master antenna) systems throughout Asia, STAR TV has created STARnet (SN). This is a separate business entity for the purpose of providing assistance to dish system sellers, installers and SMATV plus cable operators. And to support SN they have created regional training seminars (a show and tell programme where experts in dish system installation come into an area and in a day or two of sessions teach the fine points of dish installation), a monthly satellite distributed (STAR TV) Trade Show where technical people from STAR answer installation questions and demonstrate techniques through

their own satellite TV medium. In October SN launched "TV STAR LINK," a pair of printed monthly publications designed to provide dealers / installers with up-to-date information for both the programming and technical aspects of STAR TV services (1).

The combination of services within STARnet are unique and are the result of a new management team headed up by one Charles Pollard. His mandate, from Murdoch himself he says, is to get STAR TV into every possible home, hotel, club and resort in Asia. Pollard believes that he could let the service grow at its own rate as "the gospel of satellite spreads," or, he could plant some seeds and speed up its growth by making specialised services available to dealers and installers. He has chosen the latter approach.

At some point between March and June a brand new AsiaSat C and Ku band satellite (As2) is scheduled to launch aboard a Chinese Long March 2E vehicle. This satellite will be parked at 100.5E and on board will be the following new innovations:

1) An expanded C band frequency range from 3620 to 4200 MHz;

2) A new Ku-band package designed to provide high power (small dish) service to a number of Asian regions;

3) A newly created transmitting antenna package that very purposefully includes most of Australia, and portions of New Zealand (as well as most western Pacific areas west of 178E) within its 33 dBw (or stronger) primary footprint.

With the launch of As2, the same services which are now reaching into 53 nations within Asia will be expanded to reach into many portions of the (South) Pacific as well. With these new (free-to-air, and, encrypted) services will come all of the STARnet support services as well.

For much of the populated eastern coastal line of Australia, STAR TV on AsiaSat 2 will be a major new entrant into the TV viewing game. With dish sizes of 2M and below (34 to 35 dBw footprint), home viewers will have the choice of purchasing DTH systems in the A$2,300 range (plus installation) and plugging in to a variety of free-to-air sporting, news, documentary, entertainment and music channels.

For viewers in New Zealand the prospects for As2 are slightly more complicated. Because of the As2 position at 100.5E, the geometry of the satellite system link places the satellite in the 2 to 6 degree elevation region. This means the satellite will appear only slightly above the dish's west / north-west horizon. Two unpleasant affects occur when a satellite is this close to the horizon:

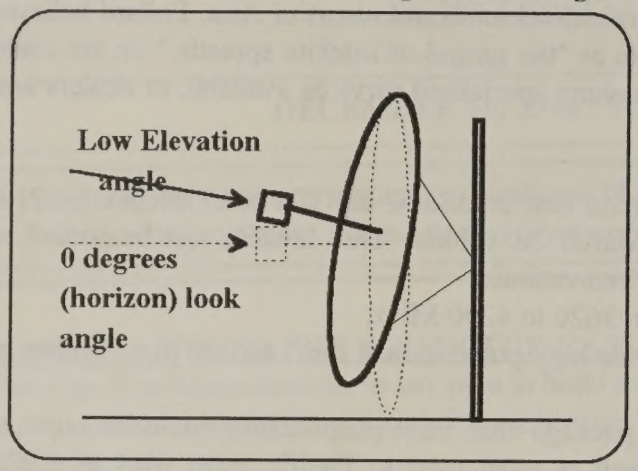
1) As the satellite dish approaches pointing straight at the horizon (0 degrees elevation angle) the dish intercepts "noise" that originates from the surface of the earth. This noise degrades the reception of the satellite signal causing "sparklies" (noise that blemishes the actual reception). At any dish elevation angle below 12 degrees the noise contribution of the earth becomes measurable. At elevation angles below approximately 8 degrees, the noise is a definite engineering challenge.

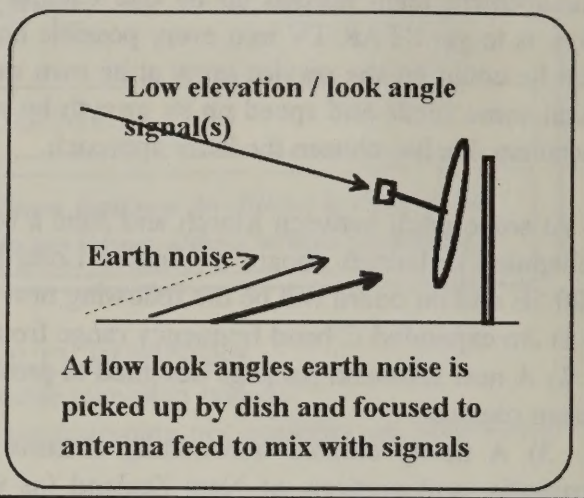
2) Not every location can install a satellite dish with a look angle as low as 2 to 7 degrees to the west / north-west and avoid pointing into a hill , mountain or dense vegetation. It is essential that the satellite dish have a "clean" (not obstructed) line-of-sight path to the satellite. If at a given location the correct antenna pointing elevation is 4.14 degrees (as is true in Auckland to As2) and the antenna will be mounted such that there is a hill or other obstruction that "sticks up" 8 degrees above the "horizon" on the As2 azimuth heading, the As2 service will not reach this particular dish.

However, balancing these low-look-angle challenges with As2 in New Zealand is the purposefully designed "hot footprint" of the satellite into eastern Australia (and New Zealand).

THE LOW LOOK ANGLE / ELEVATION PROBLEM

AsiaSat 2 low-look angles for New Zealand are as follows: KAITAIA / **El 5.44**, Az 280.16; AUCKLAND: **El 4.14**, Az 279.71; Hastings: **El 2.07,** Az 278.98; WELLINGTON: **El 3.31**, Az 280.71; GREYMOUTH: El 5.56, Az 283.31; CHRISTCHURCH: **El 4.39**, Az 282.64; DUNEDIN: **El 5.34**, Az 284.71. For most of the Australian eastern coastal area, As2 will be in the 30 degree elevation region





AsiaSat engineers obviously realised that with a low look angle into these regions, they had to provide the strongest possible signal to overcome the "earth noise" challenge. Their 33 dBw footprint reaches throughout New Zealand; that is almost twice the "power level" we are now experiencing from PAS-2 (for example). If, for example, a satellite placed a 33 dBw footprint signal into your area with a look angle of 20 to 30 degrees, you could reasonably expect to have perfect quality pictures with dishes well under 2 metres (2m) in size. With low look angles and the resulting "earth noise" degradation, the calculations suggest the dish installer in New Zealand will require a dish in the 4 to 5m range. By installing a larger dish you capture more signal (and more earth noise, but the signal builds faster than the noise). There are other solutions as well; specially designed dish "screening systems" and modified dish feeds can reduce the bad effects of "earth noise" and the details of such systems will be found in our SatFACTS publication during the second quarter of 1995.

The As2 STAR TV service programme for Australia and New Zealand, then, falls into two quite different scenarios:

1) STAR wants viewers. It wants as many viewers as possible (since viewing numbers helps them sell advertising, which in turn supports the free-to-air services they believe essential). It likes viewers in "lots" rather than singly on the simple theory that if they can assist a CATV (cable TV) or SMATV system builder access and use their signals, they will with this one act of assistance reach hundreds, thousands of new viewing homes. This is the "lot" approach.

2) Where "lots" are impractical (or impossible), such as in areas where regulations work against the installation of SMATV and CATV systems, STAR opts then for individual viewers using DTH systems.

In Australia, while it is certainly possible for CATV and SMATV systems to be users of the STAR TV free-to-air channels, federal regulation (at this time) prohibits STAR (or anyone else beaming in programmes from outside of Australia) from selling "pay Television" services there. Thus in Australia, a CATV system, a SMATV system, or a home dish owner will be able to install the necessary 2m size range dish and electronics to access the five to seven free-to-air

services but as long as the prohibition against non-Australian-based Pay TV stands, these people will not be able to (legally) access the encrypted channel services (for which a monthly or annual ... pay-TV ... fee is charged). The likely market impact of STAR TV in Australia, then, will be at the DTH level with dishes in the 2m size range; around A$2300 each plus installation.

In New Zealand there are no regulations to inhibit the use of both the free-to-air and the pay-TV service channels. However, those low look angles will be an engineering problem. Believe it or not, those low look angles help make the STAR TV service package even more attractive for those planning CATV and SMATV services. Here's why.

1) A 2m size dish system in New Zealand, using the appropriate STAR compatible electronics, would sell to users in the NZ$2500 region; before installation.

2) Unfortunately for such would-be users, although the signal will be strong, the low look angles will require the user to upgrade to a larger dish ...4m minimum is likely ... to balance out the earth noise contribution. The 4m size dish will cost more, and more importantly, it will be enough larger than 2m size backyard dishes that it will preclude many otherwise keen buyers from investing in a STAR TV system.

And, equally important, not every "backyard" will have a clean, clear "look angle" towards AsiaSat 2 at 100.5E. It doesn't take a hill or mountain to block reception; even a thick hedgerow, sizeable tree, or the neighbour's two story home can do the same thing; block the signals.

What this says is that even if the 2m size dishes would work in New Zealand, a not insignificant percentage of the backyards will be blocked from "seeing" AsiaSat 2 at 100.5E. At any price.

Which brings us full circle back to the SMATV and CATV operator. With the luxury of being able to hand-pick a location for the dish (a location which is itself elevated with a clear look angle towards As2), the cable entrepreneur can choose a dish location that minimises (or even eliminates) the low look angle problem. Of course once his dish is so-located, then he distributes the STAR TV services via cable to homes that couldn't have the service anyhow, direct with a DTH system, even if they opted to do so. As2, then, because of its low look angle, is almost a blessing in disguise for would-be New Zealand cable entrepreneurs. The signals will be strong, but troubled by earth noise. The cable operator can afford to solve these earth noise problems; most home owners will not have that option. It's a sure-fire formulae for creating a successful cable TV service:

Desirable programming, "just beyond reach" of the home viewer,
but available to the cable operator.

STARnet ASSISTANCE

STAR's Pollard unveiled his firm's plan to assist cable TV and SMATV operators "get started" during the MLE sponsored Chiang Mai (Thailand) Satellite Conference held at the end of October. He revealed that within STARnet, an entire division has been established to provide both technical and financial assistance to existing and new cable operators who will agree to "cable-carry" the STAR TV programming packages. The project was "tested" in Taiwan from May of this year onward as STAR assisted dozens of cable system operators there to install the equipment required for STAR programming, and provided medium and long term cable system financing to allow the cable operators to upgrade their existing systems and expand their system reach. For the current fiscal year (through June 30, 1995) a sum of US$50m has been earmarked

POLLARD TALKS ABOUT STARnet

"By July 1st, we will begin broadcasting from AsiaSat 2 making our ability to offer dozens of channels both real and immediate. Over the medium to long term, we could deliver as many as 100 channels. At the moment, 5 to 6 different 'clusters' of programmes are planned, each in a major regional language.

"STAR's undergoing a strategic shift from a purely free-to-air platform towards a mixture of free-to-air and complimenting Pay TV channels. We've embarked on a series of significant co-production and distribution agreements. Among these is a deal with Media Asia Films in Hong Kong for 50 feature length Chinese movies. STAR and Hong Kong's ATV will co-produce 40 hours of premium quality dramas each year for the next three years. ATV will show them in Cantonese while STAR will air them in Mandarin. Additionally, in each of the three years STAR will acquire more than 1,000 hours of primetime dramas, Sitcoms, game shows and special programmes from ATV. Another addition to our STAR Movie (channel) is PolyGram Films International which will provide STAR with 20 'A-Grade' films each year. We also have deals with Orion and many independents. All in all this amounts to a library of more than 3,000 movies available to us, today.

"In India we are building studios in Delhi and Bombay. In the Middle East, we have joined forces with Dubai Radio-Television to spread Arabic programming region-wide. Similar opportunities are coming in Indonesia, the Philippines, Malaysia, Singapore and Thailand. As STAR develops during 1995, our programming services will become increasingly regionally focused. More and more of it will be produced within the various co-production countries. Our first subscription channel, Star Movies in Mandarin and English, has approximately half of the movies originating from East Asia and the other 50% are western titles. Our goal is to provide English on almost all of our services and then allow the viewer to select alternate languages if he wishes. Mandarin audio is now a user selectable part of our Prime Sports channel, with English.

"The new AsiaSat 2 service will allow the viewer to select from multiple language audio channels, or select on-screen subtitles. All of our channels will be user friendly, regardless of where the user may be or the language he or she speaks."

by STAR for the financing of cable and SMATV systems. An additional $US50m is similarly to be available in the next fiscal year.

Here's how it works:

1) You have an existing cable system, or a sound, well thought out plan to build a new system.

2) You are looking for unique programming for your cable system, and you will agree to carry the STAR TV line-up as a part of your programming package. You are not precluded from carrying other services (terrestrial and / or satellite) as well.

3) You have or are in the process of obtaining all of the locally required permits for a SMATV or cable system. In New Zealand that would include a Network Operator status (permit) from the Ministry of Commerce (see TECH BULLETIN: 9305), a joint pole-use agreement with the local utility (if some or all of your cable lines will go in on existing overhead poles), and where required a permit under the Environmental Act from the local council to either hang new wires on poles or bury wires in public rights of way. In non-New Zealand jurisdictions, your local paperwork requirements will vary as a function of local law.

4) You go to STARnet (2) and speak with the staff headed up by David Haslingden. There you learn that through STARnet they have made arrangements with a number of essential-to-you hardware suppliers to provide virtually all of the equipment you will require to build (or modernise) your CATV / SMATV system. These include (a partial list):

1) Antennas: Paraclipse (1.2 to 5 metre)
2) Receiver systems: Chaparral (analogue), PACE (analogue and digital)
3) Modulators / Headend Equipment: Standard Communications
4) Cable: Comm Scope and others to be announced
5) Cable TV Amplifiers: Texscan
6) Passive devices (splitters, tap-offs, et al): Several sources

7) Cable TV system power supplies: Alpha Technologies

8) Connectors: PPC

9) Traps, passives: Eagle Comtronics

Pollard says that STARnet wants to be a "*One Stop Shop*" for cable and SMATV operators; all of the programming, all of the equipment, and financing where needed. To make the hardware portion work, those suppliers will ship directly to the cable / SMATV operator from regional warehouses now being established throughout Asia. The exact details of this seem somewhat unsettled at this time (we queried several of the suppliers and were told by Paraclipse, "We will know the details ourselves after attending the Hong Kong Cable and Satellite Show late in November;" an event just recently completed) but Pollard says STARnet will not operate warehousing itself. There does appear to be an opportunity here, however, for at least one supplier firm in New Zealand and one or more in Australia to "tie into" the STAR net warehouse stocking programme. If there is a weakness in this programme for the South Pacific at this time, it will be the long distance supply routes.

5) Your business plan will be studied and you will be presented with some hard decisions. If necessary, STAR net will "lay out" your system routing using scaled street maps and housing location information your provide to them. This "layout" is an essential prerequisite to system costing since you cannot accurately plan the size of the system investment until you know what equipment (and how much) will be required. And you can't tell that until you take scaled street maps and layout the system on the maps.

a) How much of the planned system cost (once the total cost is calculated) are you prepared to pay for yourself? That will determine the amount of funding you are requesting through the STARnet equity funding programme.

b) Based upon the system cost, projections of system revenues and system operating expenses, what term of time will be required for the system to "mature" to the point that it is self-sustaining and paying back the original financed amount? (See TECH BULLETIN 9401 for a discussion of system cash flow).

c) If you cannot manage to pay for the portion of the system investment STARnet thinks necessary, will you be prepared to:

1) Find additional local (to you) investors for the system?

2) "Give up" more of the system's equity value (i.e., stock) to STARnet in exchange for SN providing a larger portion of the initial construction cost funding?

In a way, dealing with STARnet may turn out to be like dealing with a bank that also sells you the equipment you need, and is willing where necessary to take a sizeable percentage of the investment in their own name if you have a really solid business plan but cannot manage a sizeable percentage of the funding on your own.

THE PRACTICAL SIDE

Taking "finance" is of course an option; if you only want STAR TV programming, you can stop at that level. Or, if you have your own finance, you may opt to purchase some of the hardware from STAR NET (most probably the PACE receivers as a minimum; see "The Star Digital Connection", to follow) and the balance elsewhere. If you do ask STAR for finance, you can count on also being required to use their hardware selection as well. That's just common (business) sense.

POLLARD ON THE OPERATION OF STARnet

"STARnet offers a full range of equipment at prices which match or beat those of the competition. We are establishing a comprehensive network of up to 20 regional STARnet distributors who will have exclusive distribution rights for the territory. Each territory has been allocated a STARnet Business Manager backed by a team of 6 locally-based Technical Managers who will be available to give technical advice on installation, servicing, operating and maintenance. We also offer a design facility which together with the dedicated (US)100 million dollar Cable Equity Fund, will provide a real turnkey solution to cable operators from rough system design to project management, equipment supply, technical support as well as the provision of exclusive programming rights in a defined area (for the pay-TV service channels).

"STARnet expects to sell US$50m of equipment in Asia and the Middle East during its first year."

Remember - their primary aim is to reach as many homes as possible. STAR NET has been created to speed up the process of getting into more homes, sooner. Everything it does beyond providing programming is to that end result.

THE STAR DIGITAL CONNECTION

All STAR TV services on AsiaSat 2 will be compressed digital video in format. The existing analogue feeds of STAR TV on AsiaSat 1 will continue for some undefined term into the future. STAR will encourage the conversion of existing terminals using their analogue programming from AsiaSat 1 to AsiaSat 2's CDV format service as a matter of routine.

STAR TV has contracted with (UK based) PACE Systems to create a new CDV format receiver package for AsiaSat 2 programming. And PACE, in turn, has subcontracted with (UK) high tech designer NTL to fabricate a CDV "format" for STAR TV. The format, we are told, will be fully MPEG-2 compatible. We are also told the format will employ a (StarCrypt) "Smartcard" for programmer control of "conditional access" (CA).

With CA, each receiver has a unique electronic address or identification number. A part of this address is internal to the receiver's factory programmed memory, the balance of the address is inside of the "Smart Card." When the user installs the receiver:

1) The StarCrypt (Smart) Card is inserted into the receiver's card slot;

2) The receiver user will dial a telephone number and report that Starcrypt card number 123456789 is now ready for service;

3) STAR will then "address" (send a message) through the satellite link to that specific receiver giving it "turn on" instructions.

At regular intervals (such as monthly) the receiver will be "re-addressed" and told it may continue to "decrypt" the STAR TV programming. This is how the compressed digital video (CDV) service to each receiver will be "controlled" by STAR TV. No money will change hands for the viewer to access these free-to-air channels; the encryption routine is a part of the basic operational parameters underlying all compressed digital video transmissions.

For the five (to seven) "free-to-air" programme channels within the STAR TV AsiaSat 2 programming package, that's all there is to it. Buy the receiver, install it, report the Starcrypt card "ID number" and leave the satellite receiver tuned to the appropriate "channel" long enough for STAR to "address" the receiver telling it that it may decrypt the CDV format free-to-air channels.

For the optional extra channels, the 24 hour movie service for example, the procedure will be the same but through a credit card billing system STAR will charge the viewer for these optional programming services. STAR, at the Chiang Mai (Thailand) Conference, said they expected to

POLLARD ON THE ASIASAT 2 "DigiStar" HARDWARE

"STARnet will be the sole distributor of STAR TV's 'DigiSTAR' IRD (integrated receiver descrambler) CDV receiver built by PACE.

"DigiSTAR technology will use MPEG-2 digital compression which through the STAR 8 C band transponders on AsiaSat 2, will enable STAR to launch 50 new languaged programming channels during 1995. All channels within the 36 dBw (and up) footprint regions will be receivable on a 1m dish; or less (*). The DigiSTAR IRD will use Smartcard technology incorporating NDC's STARcrypt encryption technology with the latest anti-piracy features. Each receiver will have addressable conditional access (CA), allowing 'pay-per-view' plus the selective reception of regional programmes, as well as the reception of data and software transmissions. This latter feature will enable each individual viewer access to the information superhighway as it rolls out in Asia (and the Pacific).

"As well as being able to choose in which language the viewer wishes his subtitles or on screen dubbing, the viewer will be able to call up an onscreen programming guide and choose what he wishes to watch from a multi-screen collage showing all of the channels being broadcast at any given time. This all adds up to more choice, better targeting and a quantum leap in the value added to STAR TV services."

*/ Australia falls slightly 'up' the footprint curve in the 34 to 35 dBw region; New Zealand and the remainder of the Pacific west of 178 east into the 33 dBw region.

have 50 separate programming channels available via AsiaSat 2 in CDV format by the middle of 1996; they plan to start off with at least 12 total (5 to 7 free-to-air, the balance optional pay).

One of the more innovative pay service channels will be "Sports Multi-View." An example. You are watching a Rugby Test and at the remote event site a programme director sits inside of an OB (outside Broadcast) van. In front of him are four, perhaps as many as 8, monitors each of which is connected to the view of the action as seen by separate TV cameras at the event. The director makes a single view selection from the bank of monitors in front of him and as a viewer you see the view the director has selected.

In "Sports Multi-View" the viewer at home becomes the "director". Four, up to 8 separate camera views ... the same camera views the director has in his OB, are fed via CDV through the satellite to your receiver. If you have one of the newer receivers that allows you to stack up one full screen picture and then several 'PIP' (picture in a picture) views of supplemental scenes, you will be able to "collage" the multiple camera views across the screen in small displays set "into" the larger primary view. At any instant, you as the "armchair director" can push buttons on the receiver remote and switch views; from one camera to another, just as if you were at the event inside of the OB and had access to each camera view the director has available.

Needless to say the full benefits of "Sports Multi-View" will come only after the viewer has purchased a brand new digital format television receiver to go with his digital format satellite TV feeds from STAR TV. But even without the latest TV set, the user can still "scroll" from view to view with his "Sports Multi-View" feature on the STAR TV service. STAR believes this new service will change forever the way sporting events are broadcast world-wide.

STAR TV has given receiver supplier PACE "instruction" that the new CDV receivers for AsiaSat 2 should be priced in the US$500 region as a maximum; initially. There is one more element to the STAR TV package which complicates meeting this pricing guideline; multiple channel sound and on screen subtitling.

The fully stereo sound pioneered by STAR TV in their analogue service (the so-called Panda Stereo system) will be expanded in the CDV format. Each TV programme channel will have multiple language audio "tracks" and the viewer will be able to select a track of choice. English, Mandarin, Hindi and others will be included. Many programmes will also be subtitled; English documentaries and movies, for example, into Chinese. It is the "Chinese element" which is

providing the majority of the design problems to the receiver at this stage.

There are two wide-area-spoken (and written) Chinese languages: Putonghua (based upon Beijing dialect) / Mandarin, which is basic to much of China, and, Cantonese which is basic to Hong Kong and southeast China. From each of these two (non-compatible) Chinese languages there are hundreds of variants. All Chinese languages use 'figures' rather than an alphabet as is common in most western languages.

When you attempt to create a keyboard or alphanumerical (on screen) system for subtitling of English, Russian or German, you have a starting point: an alphabet. With Mandarin and Cantonese, you do not have an alphabet. You have "figures" which are miniature characterisations of complete thoughts, or words. Very small changes in the picture-word drawings change the meaning totally.

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See footnotes at end for list of key Hong Kong personnel.

You can build an alphanumeric on screen display system for an alphabet based language and translate one alphabet based language to another with a high degree of correlation between different languages. Lacking an alphabet, on screen Cantonese and Mandarin present unique alphanumeric (Romanization) challenges. The commonly heard American western movie phrase "*Get on your horse and ride out of here*" in Mandarin requires virtually a screen full of characters to convey the same meaning.

PACE and STAR are trying to simplify the Mandarin and Cantonese "pictorial character memories" to as few as 3,000 total "drawings." Unfortunately, linguists advise them that it will take 20,000 total 'characters' to convey even a small fraction of everyday language exchanges.

Which brings PACE and STAR TV to a technical hurdle: the memory required, inside of their receivers, to store 3,000 (not to speak of 20,000) separate pictorial characters for Mandarin; and a like number for Cantonese. All of this is brand new, virgin ground, for these pioneers in multi-lingual television service. The final price and capabilities of the PACE DigiSTAR receivers for CDV may in fact be more dictated by the receiver's ability to deal with Mandarin and Cantonese pictorial characters than any aspect of the actual CDV processing system.

STARnet: Fact or Fiction?

Taking Pollard and his staff at their spoken word, STARnet appears to offer Pacific region viewers and cable entrepreneurs an enticing "one stop shopping place" for all of the important ingredients for profitable satellite programming viewing. The enormity of the project is staggering; a brand new satellite (provided by AsiaSat), a brand new digital transmission format requiring totally new receivers, a 'target area' of more than 70 countries spread from east-central CIS (Russia) east through all of Asia, and dropping down into the Pacific Ocean region south of the equator. Add to this a brand new educational programme to assist dealers and installers, a rapid migration from the present 8 analogue format programming service channels to what Pollard forecasts will be "50 language programme channels" by the end of 1995.

The US$100m Cable Equity Fund seems attractive, but in perspective at US$250 per potential cable subscriber (typical cost of building a new cable plant) this will fund a mere 400,000 new cable subscribers. Pollard talks in terms of "tens of millions of new viewers" by the end of 1995. If this is realistic, most of the initial funding to create new cable and SMATV facilities to deliver STAR TV programming will have to come from sources other than the STARnet Cable Equity Fund.

For Australia, New Zealand and western Pacific entrepreneurs, the biggest "message" from STAR TV is perhaps the availability of free-to-air programming channels with modest size dishes. If STAR sticks to its plan to make STARnet the exclusive distributor for the PACE "DigiCRYPT" receivers, and if receivers from GI, Scientific Atlanta and others will in fact not properly decode the STAR CDV transmissions, at the very least Pacific region entrepreneurs will need to become acquainted with one or more regional STARnet outlets to assure a source of the receivers. As these distribution outlets are identified, we will publish their names and contact information in our SatFACTS publication.

STAR TV on AsiaSat 2: FORMAT

The following will be free-to-air services:
PRIME SPORTS: 24 hours per day, English and Mandarin initially (separate audio channels).
CHANNEL [V]: 24 hours per day, music videos, 50-50 mix between "western" and Asian productions. Note that BBC World Service Radio will be on a separate audio channel here.
BBC WORLD SERVICE TV: 24 hours per day with Mandarin Chinese on separate audio channel.
STAR PLUS: 24 hours per day, mixture of Sitcoms, documentaries, general entertainment.
CHINESE CHANNEL: 24 hours per day, Mandarin language only initially.
ZEE TV: 24 hours per day, Hindi language programming.

It is our view that STAR TV will be overwhelmed by the magnitude of this project, that while As2 may well have many channels of free-to-air as well as 'Pay TV' programming choices available by July (1995), there will be many frustrations involved in trying to become a part of this project here in the Pacific Ocean Region. The footprints will be there, the programming will be there; the hardware, in spite of the announcements and best intentions, could be a significant bottleneck for all of 1995.

1/ STAR LINK, the twin monthly publications that update users and installers on the latest technical plus programming news at STAR TV is available (presently) free of charge. Ask for "TV Star Link Technical News" and "TV Star Link Programming Highlights" from: The Distribution and Marketing Division, STAR TV, 12/F Hutchinson House, 10 Harcourt Road, Hong Kong (FAX: 852-532-1763).

2) Heading up the STARnet cable TV and SMATV projects is David Haslingden. Other important people are Shaleen Vasvani and Tammy Tang. Request a copy of the 26 page Star Network TV Technical Manual which provides useful starting point data in the planning of a CATV or SMATV system. Write STARnet, Satellite Television Asian Region Ltd., 12th Floor Hutchinson House, 10 Harcourt Road, Hong Kong or FAX 852-524-4093.

A Brave New World

HOW COPYRIGHT CHANGES EFFECT CABLE, SATELLITE

New Rules, New Procedures

GETTING INTO THE QUEUE

When New Zealand lent its support to the GATT agreement one year ago a number of obligations followed. Modernisation, an updating to relevant 1990's technology, of the existing Copyright Act of 1962 flows from the GATT obligations.

Intellectual property rights and the closing down of existing legal loop holes that allow individuals (or corporations) to "trade in counterfeit goods" is a major world-wide concern. To be a part of the GATT agreement, to enjoy the benefits of reduced or eliminated trade tariffs, the nations subscribing to the treaty have agreed to individually adopt national laws which meet specified "standards" for the protection of intellectual property rights.

Technology is a major culprit here. When moving pictures were only available on rolls of transparent celluloid, when sound recordings were only distributed on sizeable phenolic based discs, and the world was amplitude or frequency modulated in what we know refer to as analogue, duplication of intellectual works without authorisation was cumbersome at best. Illegal duplication, that is making copies for fun or profit without the authorisation of the intellectual property rights owner, was neither cost effective nor a threat to copyright holders.

High speed mass duplication in the sound world first appeared with the development of 8-track tapes. For a relatively modest 4 figure investment, equipment housed in a 10 square metre room could create hundreds of duplicates from "masters" per day. If the duplicator was paying nothing for the duplicated material and his only cost was labour and machinery depreciation, he could "compete" with the authorised duplicators by offering the same essential mass-appeal material for less than half of the authorised copy price.

On the heels of high speed duplicating came the creation of the home VCR. Now the unauthorised distribution of "pirated material" spread from the audio world to the video world. Simultaneously, high sped paper document copiers appeared making it possible for entire books to be copied automatically in minutes.

When it became less expensive to duplicate without permission than to buy an authorised copy of a protected work, the entire copyright world turned upside down. But in the analogue copy world, whether duplicating a book or an audio tape or a videotape, there was always the "generation problem;" the copies were always one generation removed from the originals, and in any analogue copying system each successive generation shows a marked degradation of the quality of the copy from the original. VHS tapes, for example, stand up reasonably well to a second or third generation copy (a third generation being a copy of a second generation). But lacking some fancy "data restoration" equipment, by the fourth generation the original analogue electrical pulses on the tape have been badly "bent" and "misshaped" with a corresponding loss in reproduction quality. Thus the analogue system,, whether for hard text (paper printed material),

audio or video on tape always had a self-limiting life cycle. At some point the copy of a copy of a copy becomes so poor that further reproductions are not usable.

The Digital Threat

And then digital technology appeared on the scene. Because digital ignores noise, a digital copy of a digital master does not degrade from the original. The copy has the same quality as the original; copies of a copy have the same quality as the original. The self-limiting of analogue copying, because of the build up of "noise," is simply not a problem with digital transmission and copying techniques. In theory at least today's analogue million selling anything could be tomorrow's one-off seller; the original buyer allows a friend to copy it and this friend allows two friends to copy his single copy and these two friends each allow two friends to copy each of their two copies .... and in time we have 1,000,000 copies, each as good as the original, but the creator of the work (whether video, audio or printed) has sold but a single copy.

Responding to the GATT requirements, the New Zealand government of the day resurrected proposed changes in the existing (1962 with later minor amendments) Copyright Act last seriously visited in 1985. The bill was redrafted to reflect the demands of GATT, and evidence was taken from an estimated 200 concerned individuals and corporations during the period June to November.

In a sense, the new (1994) Copyright Act has been written for New Zealand by offshore interests. First there are the GATT requirements which very clearly tell New Zealand the minimum standards that must be met under GATT. Then there is the input originating with British and American interests. The body of the 1994 Act is in fact closely modelled after a similar piece of UK legislation adopted in 1988 (United Kingdom Copyright, Designs and Patents Act). The input from the Americans relates primarily to the new world of computer archived materials and the transfer of such material into (or out of) New Zealand using telecommunication circuits.

The printed report on the bill submitted to a Parliament committee runs to 156 pages of laboured text. The final form of the bill, after the committee had taken submissions from interested parties over the past five months, is just now before the full Parliament. The enacted bill will effect just about every person in New Zealand in one or more ways, because:

1) There will be new regulations limiting the manner by which both government and private libraries are allowed to make copies of material;

2) Any operator of a "public copy machine" will be forced to advise all users of their potential violation of copyrights whenever the copying machine is used;

3) All literary, dramatic, musical and artistic works in virtually any form will have new protections from replication (photographing or videotaping statutes, paintings, photographs or books, for example, will become a punishable act unless appropriate written permission has been obtained from the artistic creator).

4) Under most circumstances, designers of bridges, buildings, even flower gardens will be able to claim "artistic creation rights" and prevent the unauthorised replication of their work in any form (including, for example, a journalist with a camera taking a photo of the "work" for publication).

5) Under most circumstances, parts of an artistic work will be treated with the same protection as "the whole works." Photographing a doorway of a building or an entertainer whistling in public more than 8 notes of a protected musical work will be just as much a violation as replicating the entire building or the entire musical score.

6) Anyone who becomes part of a commerce stream for an "unauthorised work" will have the same guilt as the unauthorised copier. Purchasing a "pirate copy" of protected music in Thailand, for example, carrying home a cassette and "sharing it" will carry violation penalties similar to those that will apply if you set up shop in New Zealand to replicate here without authorisation. The mere possession of an unauthorised copy of anything (electronic or printed) will be a violation. A friend in Germany sending you an unauthorised single page copy of a magazine article published in Europe is an infringer; you will be a violator for having possession of or having received the unauthorised copy. There is one notable exception to this section of the law: If an article appears in a scientific or technical journal and there is also published an "Abstract" of the article, you may become a copier of or possessor of the "Abstract" (only) without violating the law.

The intent of the GATT prescribed terms is to put an end to any form of copying of virtually anything created by man (or man plus computer) without the express permission of the author. As you might anticipate, how this impacts on the television and radio broadcasting world is quite significant.

WHAT Will Be Legal?

It will (still) be legal to make a copy of a computer programme you have purchased for the express purpose of having a "back up" should the original be lost or damaged. But sharing your "copy" with another person will be illegal. Allowing someone to "share" your copy and make a copy will also be illegal.

It will (still) be legal to use a VCR (or in the future, a DVR) to "time shift" programming for in home viewing "at a more convenient time." Allowing copies of your copy to be made by a third party is a violation.

If you are the creator of a television programme for cable TV or broadcast, and you will be utilising previously recorded materials to insert into your programme, provided you obtain the permission of the copyright owner of the previously recorded materials you will be authorised to retain your copy of the previously recorded materials "for a short period of time" as you are creating your own programme.

You will be allowed to make a photographic copy of an image appearing on a television screen but only for private or domestic use.

If you own or operate a motel, hotel or camp ground, you will be subject to copyright violation if you distribute to the patrons (via cable or otherwise) any pre-recorded copyrighted material without the permission of the copyright owner. On the other hand, if you operate a pub and have one or more TV sets operating in the lounge, you apparently will not be in violation of copyright if you show on those sets copyrighted material provided no admission or cover charge has been made.

If you are a non-profit body and wish to create subtitling of broadcast television programming (example: you are a recognised non-profit French Language Club and you wish to videotape Paul Holmes and subtitle him in French for use by your club), that will be permissible. There is one concern in this section (Clause 83): It limits making copies for subtitling or "*otherwise modifying television broadcasts*," to recognised (authorised) groups supplying the material to "*people who are deaf or hard of hearing, or physically or mentally handicapped in any other way.*" It might be possible to argue, successfully, that a person who speaks only French is handicapped ...

RIGHTS OF CABLE TV

Under the original draft legislation a cable television system was to have the legal right to receive off the air (at VHF or UHF) terrestrial television broadcasts and to "simultaneously retransmit" the programmes to cable subscribers. However, two geographic areas are involved:

1) If the cable operator is within the "same area" (coverage region) for which the broadcast was originally intended, or,

2) If the cable operator is outside the coverage region of the telecasting station.

Here the Copyright Tribunal is empowered to establish compensation rates to be paid by the cable operator to the telecaster. Some examples:

If the telecaster is licensed to serve all of greater Auckland, but because of the effects of terrain a section of Auckland receives poor signals "direct," a cable operator could provide fill-in coverage via cable to homes in the terrain shielded region. The telecaster could request payment for this "use" of their transmission, but the Copyright Tribunal would be obliged to determine whether the broadcaster has already been "paid" for coverage of the area. Since telecasting coverage "maps" do not accurately reflect shadowed areas the intent of the law is to avoid allowing the telecaster to be paid first for covering the area (paid by its advertisers) and then to turn around and double dip by collecting from the cable operator as well. The Act suggests the Tribunal, in this circumstance, would rule that no additional copyright charges are liable from the cable operator.

The Act does not properly define "television service area" but there is the belief that in the case of "national services" (TV1, TV2 and TV3), where they have acquired copyrights for programmes based upon "national service throughout New Zealand" that the intrusion of distance or terrain into local reception conditions should not be an argument to demand the cable operator pay additional copyright fees for these

CLAUSE 82: Cable Television Retransmision

(1) This section applies where a broadcast made from a place in New Zealand is, by reception and immediate retransmission, included in a cable programme service.

(2) This section applies,-

(a) Copyright in the broadcast is not infringed if and to the extent that the broadcast-

(i) Is made for reception in the area in which the cable programme is provided; and

(ii) Is not a satellite transmission or an encrypted transmission

(b) Copyright in any work is not infringed if and to the extent that the broadcast is made for reception in the area in which the cable programme service is provided

(3) This section does not apply if or to the extent that licences authorising reception and immediate retransmission of a broadcast are available to a person providing the cable programming service under a licensing scheme and the person providing the cable programme service knew or ought to have known that fact.

CABLE PROGRAMME SERVICES MEANS

...a transmission service where the transmission is -

(a) For reception by 2 or more places, either simultaneously or at different times, in response to requests by different users; or

(b) For presentation to members of the public;- but does not include a transmission service that is not, or so far as it is not, excepted by or under the following provisions of this section:

(ii) The visual images, sounds or other information transmitted by the system are conveyed solely for his or her private and domestic purposes; and, the system is not connected to any other telecommunications system:

(d) A transmission service where-

(i) All equipment used for the purposes of the telecommunications system through which the service operates is situated in, or connects, premises that are in the occupation of a single occupier; and

(ii) The system is not connected to any other telecommunication system,-

except where the service operates as part of the amenities provided for residents or inmates of premises run as a business.

services. Television New Zealand and TV3 may attempt to "test" this thesis before the Copyright Tribunal.

Under the Act it will be a violation to receive encrypted SKY transmissions and to decrypt them for cable viewers without the permission of SKY. This would apply to cable serving entire communities, motels or other places of lodging, or even duplex flat units. SKY (and other terrestrial encrypted services) are protected from "unauthorised duplication" (sharing) just as copying an issue of TIME or a tape of Jurassic Park is a violation.

The Satellite Signals:

Satellite signals that originate within New Zealand (only TVNZ today) will be treated as terrestrial signals if received within New Zealand or its territories.

For satellite signals originating elsewhere, the Act defers to the copyright regulations in force at the country of origination. A satellite broadcast of an UK soccer match, relayed via Intelsat through Singapore, will be guided by the UK law even though the satellite signal received in New Zealand has passed through Singapore and the actual uplink you are receiving started (last) in Singapore.

On the surface, the provisions relating to the reception of satellite delivered signals would appear to be "out of bounds." However, there are powers in reserve should the government elect to modify the law after it passes Parliament. For example:

Clause 192 allows the governor-general, by Order in Council, to apply any of the (internal to New Zealand) provisions if the Act to "other countries." An example of a provision which Council would seem to be able to apply, at its discretion, to satellite reception is Clause 35:

"*Importing infringing copy - Copyright in a work is infringed by a person who, other than pursuant to a copyright licence, imports into New Zealand, otherwise than for the person's private and domestic use, an object that is, and that person knows or has reason to believe is, an infringing copy of the work.*"

Taking the document as it is apparently intended, an individual home may import satellite programming for private or domestic use without concern. A public place such as a motel, hotel or camp ground may import programming and distribute the programming to residents/tenants provided this programming is not licensed to a New Zealand entity. A cable system can import and distribute satellite programming subject to the provisions of the applicable copyright laws in the country of transmission origin, and provided no New Zealand entity has obtained rights which supersede or override the cable firm's rights. A television broadcast station can rebroadcast satellite delivered programming subject to the laws of the country of origin and there being no conflicting agreement with another New Zealand entity.

PIRACY: Hard Language

For the first time in New Zealand Copyright Law there are strict definitions and harsh penalties for intercepting and decoding encrypted transmissions without the permission of the "rights holder."

Clause 224 sets out that when a broadcaster or cable firm makes charges for the delivery of programming, or, sends encrypted messages that originate in New Zealand, it will be illegal to:

a) Manufacture, import, sell or hire out any apparatus or device designed or adapted to enable or assist persons to receive programmes or other transmissions when they are not entitled to do so; or-

b) Publishes any information that is calculated to enable or assist persons to receive programmes or other transmissions when they are not entitled to do so.

The penalty for committing such an offence is being liable on conviction to a monetary fine of $5000.

c) Any electronic copyrighted material that has a "copy protection" system in place is likewise protected. Any device that can circumvent the copy protection, any published information with the intention of enabling persons to circumvent the copy protection, will be subject to the same monetary fines as the unauthorised reception of transmissions provision.

ABOUT OUR OWN COPYRIGHT

Each issue of Coop's Technology Digest is copyrighted by Robert B. Cooper. To their credit a number of major New Zealand corporations have wilingly agreed to pay a modest sur-charge for the privilege of making additional copies of each issue for distribution to staff members. We began this programme with SKY Network one year ago, and this programme is now extensive. On the opposite side of the coin, there are many other New Zealand companies (including household names in the broadcasting field) who subscribe for only a single copy and instruct their staff to make as many as 25 copies of each issue for internal distribution. Shame on these folks for being the first to scream for protection of their own broadcast copyrights and the last to respect the published copyrights of others.

Our replication rights terms are straight forward and modest in cost; inquire today by writing: Gay Cooper, Replication Rights, Coop's Technology Digest, PO Box 330, Mangonui, Far North (FAX: 09-406-1083).

IN THE DECEMBER 15th SatFACTS MONTHLY

☐ PanAmSat LOADS UP: Reuters, (US) CBS, NBC, three 24 hour per day Chinese (Mandarin) language channels, Prime Sports, Country Music Television, NHK national and international service, Discovery ... the list grows longer by the week.

☐ A(nother) new RIMSAT satellite places 3 metre size PAL format pictures into New Zealand.

☐ Threshold Extension Receiver Technology: Getting 5m pictures on a 3m dish. The truth behind the claims.

SatFACTS MONTHLY is now read in 15 Pacific Ocean Region countries and expands to a full "magazine format" publication in February!

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TECHNOLOGY
BYTES

...BITS and BYTES you may have missed in the rush to make a buck...

December 09, 1994 / ISSUE 94-12-13

SATELLITE TV AND RADIO

Intelsat 508, the work horse satellite at 180E, is being replaced in orbit by slightly newer 511 at 5AM on the 10th of December. I508 has been in "inclined orbit", gyrating twice daily in a figure 8 pattern north and south of the equator, since 1991. With each passing month the "length" of the "8" has been increasing, an expected occurrence for a satellite first launched in 1984. This figure 8 movement has required "tracking" by all terminals using the satellite, a demand that dishes or their feeds move in a systematic (predictable) loop over a 12 hour period. Clarke Orbit satellites, when new, are totally stable but as they age the operators may elect to allow a figure 8 pattern in lieu of retiring the satellite. I508's wanderings had just passed a total of 6 degrees movement (+/- 3 degrees from the equator) and were increasing at the rate of 0.85 degrees per year. Intelsat recently launched new satellite 703 to the 177E position of I511, and in doing so was able to move 511 over to 180 as a temporary replacement for 508. The changeover means dishes tracking 511 at 180E will have a smaller figure 8 (+/- 2 degrees at this time) to track. The "savings" is temporary; by this time next year 511 will itself be approaching the +/- 3 degree point. An Intelsat 7 series satellite is planned for 180E as a new replacement during the first quarter of 1996.

Live, launch failure of new PanAmSat 3 (PAS-3) satellite was witnessed by hundreds of private dish owners throughout the South Pacific region on December 2nd. PAS-3 was launching courtesy of Ariane Space from French Guyana site and telecast of launch 42L was distributed via PAS-2. Observers saw the Ariane rocket lift-off and then fail to achieve proper attitude after a third stage failure. Ground controllers destroyed the satellite by remote command to prevent it crashing back to earth in its out of control mode. The loss is devastating to the PanAmSat plan to provide complete globe-circling communications in direct competition to Intelsat. The satellite would have been positioned at 43W and was scheduled to provide DTH services using compressed digital video technology to significant areas of South America. Ariane Space launch failures now total three in the past 15 months, seven in all, and new launches are scheduled through 1995 at approximately 4 week intervals. An earlier launch failure of Ariane in February had delayed the launch of PAS-2 by more than six weeks.

PanAmSat PAS-2 UPDATE / to December 05

The logjam to PAS-2 (169E) service broke during the past month and while most of the satellite programmers now using PAS-2 are in a temporary analogue mode using temporary (not permanent) transponder assignments, it is a rare time now when there are not at least six (and as many as ten) separate TV "programming services" visible when you switch to the satellite with a motor driven antenna from Intelsat at 180E. Several hundred New Zealand, even more Australian and POR dish owners have reported to our **SatFACTS** publication the quality of their reception. In a single sentence: 2m antennas in eastern Australia and New Zealand, up to 3m west of 178E and up to 5m west of 170W.

Services now being seen routinely include: NHK (international feeds and national network service, after 8PM NZT), Chinese Television Network's Zhong Tian Channel (Timely Information) and (scheduled for 12 December start) the Dadi Channel (Lifestyle), Taiwan's CTC-36 (commercial) channel national service, Reuters, (American) CBS Network service, (American) CBNC/ANBC business news channel including many NBC news and feature programmes, CMT (Country Music Channel), (American) Prime Sports Channel (after 6PM NZT), ESPN (in B-Mac encryption but subscriptions available through SKY Network New Zealand), plus digital formats of Filipino ABS-CBN and Turner International. Due up at anytime is The Discovery Channel. Viacom's MTV service has not announced a start date. Full details in **SatFACTS** for December 15.

ASIA / PACIFIC SATELLITE CENSUS: Feast and Famine

A total of 14 new satellites are planned for launch in the Asia-Pacific Clarke Orbit Belt region (87.5E to 180E) by the end of the first quarter of 1996. By the end of 1995, an estimated 850 "transponders" will be available to the region compared with fewer than 200 in 1992. Studious analysts believe the marketplace needs around 500 to properly serve the region and claims the 350 beyond that are "excessive." Orbital spots, as we have seen in recent months (Apstar et al) are already scarce and the situation will grow more complicated. This month's launch of Apstar 2, to 87.5E "or some other applicable slot" shows how tenuous the orbital slot reservation system has become. New Korean, Malaysian, Japanese and Thai satellites are on the way. The Philippines is requesting three orbital spots for its new Agila system, will settle for one slot. The People's Republic of China, the "heavy" in the orbital slot battles, says it needs 51 transponders now but only has 24 available. Japan is offering to help China out; their new JSAT3 scheduled for mid-95 launch will have 32 (C + Ku) band transponders on board and Japan already has 126 transponders available while analysts say Japan needs but 80. Further complicating the satellite orbital wars is the peculiar design of Thaicom 2; spot beams to the Philippines and Europe (!); a strange set of footprints indeed for a Thailand domestic satellite. The "fun" is only beginning!

Apstar 2, the follow on satellite to maverick Ap1 satellite now temporarily sitting at 138E, is scheduled by Chinese Long March rocket for 20 December. You will recall that Ap1, carrying multiple cable TV programming channels into Asia, had initially been placed at 131E snugly between a RIMSTAR satellite (130E) and a Japanese satellite (132E). The "fit" was too close and Apstar had neglected to obtain proper international clearances for the 131 location resulting in the satellite being moved to a temporary location held by Tonga at 138E, late in September. The precise location for Ap2 remains a tightly guarded secret although Ap1 user Turner International has been telling clients to expect it at 87.5E. Apstar satellites are primarily owned by Chinese government quasi-commercial corporations and the thin line between national sovereign rights for satellite positioning and the commercial rules of satellite placement have been bent by Apstar in the past. At least one European source is reporting Ap2 will be placed at 112E. On the surface, this seems to be Ap1 all over again as cable programmer Palapa B2P is firmly rooted at 113E and Chinese national television satellite DFH2 is at 110.5E. Normally, a minimum of 2 degrees separation between satellites using the same C band frequencies is maintained to allow earth station antennas to "separate" the signals from the ground through precision pointing of parabolic receive dishes. At 112E Ap2 would be seriously close to Palapa B2P. So while the odds are the 87.5E position is the correct one for Ap2, given the recent track record of Ap1, 112E cannot be discounted until the satellite is safely in Clarke Orbit and transmitting.

Australian satellite pay TV programme delivery company Australis Media Ltd. has formed a "partnership" with three of Hollywood's major film studios granting the satellite delivered pay service access to movie product. The film company partners, Sony Pictures Entertainment (including Columbia and TriStar), Paramount Pictures and Universal Pictures / MCA will own equal shares with Australis in the partnership. Under the terms, the movie firms will be allowed to acquire Australis convertible debentures at a priority price at any point within 27 months of the agreement. For Australis, they receive Australian-exclusive rights to films from the three major studios for an initial period of 5.5 years with an option for an additional five years. Australis has as an equity investor US cable giant TCI and it is through the TCI connection that the Prime Sports network service (now being tested on PAS-2) will be delivered to Australis for reuplinking and distribution throughout Australia on Optus. Within Australia proper, Australis has acquired 58 MMDS (microwave) licenses to take the Optus feeds down and retransmit them over major geographic centres in the 2.1 GHz band. Pay TV customers of Australis in turn will lease or purchase low cost rooftop MMDS antennas and converters for reception of the terrestrial microwave pay TV service channels. Australis will also distribute pay TV directly to homes via satellite using Optus in areas where MMDS is not available. The firm's CEO, Neil Gamble, believes that by 1998 60% of the Australis pay TV home universe will receive their

RIMSAT BACKGROUND

CTD issue 9405 (p.2) reported on the operations of Indiana-based satellite system operator RIMSAT. For newer readers:

RIMSAT is a US corporation that leases satellite parking spaces from the Kingdom of Tonga. Tonga filed in 1988 for geo-stationary Clarke Orbit parking spaces for 16 satellites; they were granted six. Tonga thus became a warehouser of satellite orbit spots, leases these spots to satellite operators of which RIMSAT is one. RIMSAT, in turn, leases in-place Russian Ghorizont series satellites and rents out transponder space to telecasters and others.

programming via DTH (direct to home satellite) and 40% will receive it via MMDS outlets. He is also quoted as saying "*We will definitely fire up on Optus before the end of January*" but suggests that the initial (test) service may consist of "*One sporting channel*" (a mixture of PRIME Sports and other directly acquired Australian sport programming). Key to the actual start-up of multiple channels of Australis Optus delivered pay TV will be completion of an Adelaide "uplink and customer authorisation centre" still scheduled for sometime in February. The most likely Optus (B1) transponders for the Australis service are 10 and 11H, both capable of reaching into New Zealand.

Koreasat 1, first of a two national bird system, is scheduled for February-March launch by McDonnell Douglas Delta II rocket. For the (south) Pacific Ocean Region the satellite has nominal direct interest as the boresight coverage pattern overlaps outside of Korea only into neighbouring Japan, North Korea and portions of the China coast. The design is of some interest as the BSS (broadcast satellite service) beam centre will have a footprint power of 62.4 dBw and receive antennas will be under 0.3m in diameter (!) with three (27 MHz wide) TV channels on board in the 11700 - 12,000 MHz band giving an entirely new meaning to "high powered satellite" service.

RIMSAT, operator of leased Russian Ghorizont series satellites at 142.4 and 130E has apparently upgraded (by replacement) their 130E satellite. Late in November New Zealand dish owners began reporting the presence of RAJ-TV, a Hindi language general programming format beamed into India, on the -1 (3675 MHz) transponder. Antennas in the 3m size range are seeing pictures of PAS-2 (Country Music Television channel) quality with standard 6.6 MHz subcarrier audio during the 7PM (test card; 7:30PM NZT programming start) to 7AM period, daily. With the twin Asian Television Network (ATN) Hindi language services at 142.5, POR viewers now have 3m antenna size access to three common language channels.

Test signals seen on PAS-2 Ku band are just that; transponder tests by PanAmSat engineers checking out the equipment. At press time, there remain no signed contract users for the PAS-2 Ku band portion although there continues to be serious interest from Asian firms who are considering this Ku service for SMATV and other applications.

Intelsat moved small step closer to creating DTH satellites at November meeting in Venezuela. There was agreement that "DTH will be public telecommunications service" (standard by which Intelsat determines its own role in space relay). Next hurdle, convincing Intelsat Board of Governors there is sufficient "business" available against stiff privately owned satellite competitors (such as PanAmSat), to justify a new family of satellites from Intelsat for this purpose.

European ASTRA 1D "DTH Bird" satellite launched successfully aboard Ariane 42P is now at 19.2E and will go into DTH service very shortly for much or Europe, western Asia and northern Africa. Follow-on Hotbird 2 is scheduled for August 1996 launch.

A German official of Deutsche Aerospace, working with the Chinese space industry to create the next series of domestic satellites for China, pondered why the Chinese were only interested in C band technology for television delivery. With Ku band costs lower than C band, and hardware so much easier to install, he was perplexed. After two years of prying he has an answer:

"*China prefers C band since the need for larger ground antennas (to receive the satellite signals) makes it more difficult for users to hide unauthorised installations.*" China requires all DTH users to obtain official permission before installing dish antennas.

AFRTS (B-Mac encrypted video / audio) on Intelsat 177E will soon have a new, non-encrypted audio sub-carrier service. Army & Airforce Exchange Service (AAFES) will operate a 24 hour per day music channel service as a part of the AAFES Satellite Radio Network. AFRTS Radio is already present in non-encrypted form with a variety of audio programming services, primarily news and sport oriented.

The UK had 2,746,000 installed satellite dishes by the end of August. New dish sales during 1994 have averaged around 31,000 per month. UK analysts believe the market peaked during the second half of 1991. In a separate measurement, Murdoch's BSkyB service claims they are averaging 17,000 new satellite pay TV customer additions each week; their universe, however, encompasses much of Europe in addition to the UK.

Discovery Channel, scheduled for use of PAS-2 before end of this month, will expand to five separate channels by midyear 1995. The highly successful format which screens programming likened to "National Geographic Magazine, on video," will continue with four additions: a nature network called "Animal Planet", a science service called "Quark,", a history service called "Time Traveller," and a lifestyle network titled "Living." With the use of CDV, all five separate programme channels will be distributed via satellite on one transponder.

Associated Press is basing the new APTV 24 hour news feed in London and distributing the service world-wide via satellite. The service is intended primarily for news organisations and TV networks (CNN is a client user) as a source for news clips and live coverage of the daily news from global sources.

News Corporation financials for period ending September 30th reported overall global profit of NZ$392m. European satellite service BSkyB was cited as realising "significant increase" in revenues; Asian STAR TV service still reporting loss "in line with expectations."

US regulatory agencies setting rules for licensing of satellites and authorising specific uses for each satellite are urging major rule change: To drop present distinctions between satellites authorised for "domestic (US) service" and those authorised only for "international service." If adopted, many of the US DOMSAT operators would modify their coverage patterns to include regions outside of North America. Several applications to do just this, including one that would include the South Pacific inside of western US coverage footprints, are before FCC.

Against major US television networks, CNN and its sister service CNN Headline News are now collecting more viewers for breaking news coverage. In past US (ABC, CBS and NBC) networks have maintained clear domination of reaching viewers for fast breaking news coverage; an aspect of news operation which CNN has sharpened to a new art form. CNN in recent months has been collecting 27.1% of viewers against 26.3% (ABC, 25.7% (CBS) and 20.0% (NBC).

DIGITAL TV AND RADIO

IBM has joined the MPEG-2 decoder chip race; their unit measures 8.1 x 8.5mm and has 208 pins (!). Pricing is in the NZ$145 range in 1000 quantities. **Mitsubishi** has their M65770FP single chip MPEG decoder now in production. At NZ$150 it has a unique wrinkle; conversion of 24 frames per second film to 30 frames per second video. And **Toshiba** now has single chip decoders and encoders available in small quantities; their decoder chip is presently priced at NZ$325. **C-Cube Microsystems** has begun delivery in small quantities of complete MPEG-2 video encoder for use at satellite uplinks. NTSC package, selling for NZ$21,000, includes adaptive field / frame motion estimation, DCT processing and widescreen extended definition TV (EDTV). PAL encoder is less expensive; NZ$14,000.

Germany's SDR and SWF networks will begin Digital Audio Broadcasting (DAB) using band III TV channel E12 (223-230 MHz). This is a move very similar to the BBC's announced plans to utilise 217.5 to 230 MHz for DAB in the UK. Existing TV translator stations operating on E12 will be converted to UHF and the translators reconstructed for DAB relay with 1kw e.r.p. By joining the UK DAB band III approach, the Germans greatly bolster the plans of the BBC to make their DAB system an exportable format for use in other countries world-wide.

NTL and PACE are displaying preproduction complete compressed digital video (CDV) hardware packages. The VSC4000 MPEG-2 system is scheduled for commercial use with the launch of AsiaSat 2 in mid 1995 (see page 2, this issue). With the system up to 18 separate TV programmes can be multiplexed to a single uplink transmitter (transponder). NTL created the video compression techniques, PACE the decompression and receiver technology. News International is supplying the conditional access (individual receiver addressable) while Comstream is supplying the modulation technology.

Philips is continuing to aggressively market their Video CD (CDi) system software, releasing movie The Firm simultaneously on VHS and CDi. Lower cost CDi releases are now being sold in Europe; 50 titles in all from CD Vision in the NZ$25 to $33 range.

Matsushita has dropped plans for video CDi product based upon Philips MPEG-1 standard finding delays in MPEG-1 chip manufacturing would not sort out before the likely availability of fuller-feature MPEG-2 chips in mid 1995. The CDi player had been forecast to retail in the US$1,200 region.

Matsushita has developed a CD-ROM technique that allows 6,000 times as much material to be packed on a 5-1/4" disc. A standard disc has the capacity to store 650Mbytes of data; the new Matsushita technology will place an entire full length movie on just 5 square mm of disc space.

Digital video format consumer recorders using tape as storage mechanism are now scheduled for late 1995 debut in world markets but their rein is not likely to last beyond 2000 according to industry analysts. The projected format for the next generation home recording systems is built around video CD on discs with upwards of 125 minutes of record and playback time on a 5" disc using MPEG-2 data compression.

1993 interim decision to adopt Dolby AC-3 system for audio portion of US based Grand Alliance HDTV system standard has been ratified in lopsided 40 - 1 vote taken in November. The US HDTV system expects formal approval

from US FCC for the new standard in last quarter of 1995, clearing the way for the start of HDTV telecasting on a commercial basis there in 1996.

"Defacto standards" for MPEG compressed digital video may have peaked. New North American Digital Group (NADG) has brought together representatives from broadcasting, cable, satellite, consumer and telephone industries to try to work around the proprietary CDV packages now being offered by General Instruments (GI), Scientific Atlanta (S/A) and NTL (in UK). Group appears to have agreed-to-agree that defacto standard is not desirable, only MPEG-2 base meets "standard definition" and that users should insist that suppliers adhere to the MPEG-2 format. Our SatFACTS MONTHLY for November 15th explored this issue at length pointing out the disarray on PAS-2 satellite because of proprietary MPEG formats.

CONSUMER ELECTRONICS

Philips "Ghostbuster" project, tested in New Zealand last June-July and adopted in Australia by broadcasters, will be marketed through newly created Speciality Products Group within Philips Consumer Electronics Corporation. Ghostbuster has been formally adopted by US regulatory body and is recommended as world standard by International Telecommunications Union. European Broadcast Union (EBU) is slated to consider system as a 'standard' within next 60 days. Philips plans consumer products during 1995 including plug-in decoder for previously wired -or GCR-projection TVs with Philips and Magnavox branding. Stand alone units that include TV tuner which demodulates the TV signals for GCR processing before sending the enhanced signal on to TV set on standard UHF channel are expected by end of 2nd quarter 1995 in NZ$440 region.

3D television screens are promised in consumer hands by 1997. Sanyo has developed a 3D display using a liquid crystal technology. Unlike many 3D systems proposed to date, this one does not require the viewer to wear glasses for the 3D effect.

Hitachi has developed a flash-memory chip camcorder which it is targeting for 1998 launch at under NZ$2,000. The unit will require no moving parts, store approximately 30 minutes of digital video on a 400Mbyte memory 'card' and the total weight and size of the unit will be less than half of the smallest present camcorder units.

World-wide sales of consumer camcorders should complete year with approximately 5% volume gain over 1993. In US market VHS-C has pulled ahead of 8mm format in sales (38% versus 37%). In US market, low-end Camcorders are now being offered at US$599 (NZ$1050).

Sony (23%) and Sanyo (18%) are leading sellers in UK camcorder market followed by Panasonic (16%). In comparative study with year 1989, Panasonic and Sony were tied for first place that year and Sanyo did not register.

Smaller CCD (1/4" / 6.35mm) with higher resolution (410,000 pixels) is now being shipped by Sharp Electronics LCD facility in Washington state. Device is being used in new Sharp multimedia Viewcam consumer product and features increased sensitivity with higher gain for low light level applications.

Petition to standardise method of measuring and claiming camcorder light sensitivity is making rounds of US EIA Engineering Committee. Problem arose one year ago when it was noticed that some camcorders claiming 8 lux sensitivity in Japan were being marketed in US with 1 lux claim.

Marantz, an affiliate of Philips, has introduced their LCD-410 pocket portable TV receiver with a 4" / 101mm display screen. Novel features include 1" / 25mm thickness when "folded" for transport, and enhanced brightness for comfortable viewing in outdoor full sunshine locations. Price not announced.

Japanese consumer electronic industry financial results continue to be largely negative and recent reports are highlighted by monster **Sony** paper loss of US$3.2B in fiscal 2nd quarter. The Sony loss is tied to revaluation of its Columbia Pictures assets purchased in 1989; itself a paper adjustment amounting to a US$2.7B "loss" in asset value. In the more real and immediate world, Sony reported an increase in sales of its video equipment (+6.7%), audio (+5.0%) and TV receivers (+11.8%) against year ago numbers. **Matsushita** reported 6.0% increase in domestic sales and 7.0% in foreign sales in 2nd quarter. **Pioneer Electronics** sales dropped 1.6% in quarter led by video sales falling 11.7%. **Sega Enterprises** anticipates net income to be flat with 1993 period although global sales are reported down 5%.

Study by Japanese EIAJ manufacturer's group predicts internal market will purchase 10,000,000 widescreen TV sets in year 2000, making up 81% share of all TV receivers sold that year. Japan this year is buying 1.55 million widescreen sets, far more than the balance of the world combined, in a universe of 10.25 million receivers sold. EIAJ does not believe radical changes in TV display technology will have taken "hold" by 2000, suggests flat screen displays and 3D screens will make significant marketplace sales only after the turn of the century.

THE PROBLEMS WITH CONTINUED USE OF TELEVISION CHANNEL 1

New Zealand On Air's decision to fund TV3 expansion to the western coastal areas of South Island "early in 1996" (page 27, here) brings back concerns that TV3 may utilise TV channel 1 (44 - 51 MHz) for one or more of the new transmitters; a plan initially discussed in CTD for July (CTD: 9407, p.24). Channel 1 was originally put into service in 1960 at a time when little documentation existed on the characteristics of wave "propagation." Channel 1 was selected because it was less expensive to use than higher frequencies (channels in the 4 to 10 region) and evidence accumulated in the US during the 1930's and early 40's suggested TV signals travelled furthest in hilly terrain at this lowest channel frequency.

The model for using this frequency range was the UK which had pioneered it in 1936. Australia adopted a similar channel plan and it is the Australian use of their channel 0 (roughly equivalent in frequency to our channel 1) which now amplifies New Zealand problems with continued use of channel 1. In the interim, the UK has abandoned this frequency range because of interference problems.

The 1930's derived US data turns out to be accurate; TV signals do travel further at channel 1 than at say channel 4. An analogy: The AM broadcast band provides reasonable local or regional service in the daytime hours by direct or ground wave. But from dusk to dawn, "skywave" produces much longer distance reception and stations hundreds, thousands of kilometres away "skip" into the direct wave coverage of nearby stations during the dark hours. AM radio stations operating with high power (10,000 watts and up) manage to "hold onto" their direct wave coverage areas against the interference from "skywave" signals during dark hours; lower power AM stations are essentially "wiped out" even in their direct coverage regions by the powerful, distant source, "skywave" signals.

Skywave interference from distant stations occurs on channel 1. In 1954 when Australia was creating their channel 0 and in 1960 when New Zealand began using channel 1, the best knowledge of the day suggested that such interference was very rare and for only brief periods of time. Now we know better.

A systematic programme to record those occasions when "skywave interference" between Australia and New Zealand creates intolerable disruption to New Zealand TV viewers along the western coasts of both South and North Islands has been underway since 1991. The data, collected by government licensed radio operators, reveals there is on average between 610 and 720 hours per year when Australian TV transmitters at Mt. Ulanda (NSW) and Darling Downs (Qld) arrive along the coasts from Greymouth to Kaitaia with sufficient intensity to disrupt viewing of a 100 watt New Zealand TV channel 1 transmitter only 5 kilometres from the Kiwi TV viewing home. For TV homes trying to receive the channel 1 signal at distances greater than 5km, the number of hours per year is even greater than this (CTD: 9407, p.25); up to 9% of the total time, concentrated in the December to March period.

Television New Zealand has learned this lesson and where possible has avoided use of channel 1 for lower power repeater stations along the west coasts of both islands. Unfortunately for TV3, expanding to these areas and looking for the "best coverage at the lowest possible cost to TV3," the "TVNZ vacated channel 1 frequencies" in these areas are very tempting. The following newspaper report appeared in the Opunake Coastal News recently and it relates the difficult trials and tribulations experienced by Television New Zealand and its subsidiary BCL in attempting to resolve interference problems created by this "skywave interference" in the Taranaki region

"TVNZ trying again to improve TV1 reception"

"Coastal residents from Oakura to Opunake and Oeo have long had to put up with substandard television reception with promises of a clearer signal from TVNZ yet to materialise. In April this year TVNZ's subsidiary Broadcast Communications Limited (BCL) raised everyone's hopes when it installed a single pole antenna at an upper Aurora Road site to improve the TV1 signal in the area. However the antenna failed to deliver and was disconnected. At the time TVNZ assured us the system would be redeveloped and running within a few weeks. Four months have since elapsed, but BCL now reckon they've got the design right and last week obtained Council approval to replace the single pole antenna with a much larger one. The new structure will consist of three ten metre poles linked by wires. So approval has been given, the design is right, and we at last have consistent, clear television one reception? *"We can't give a 100% guarantee"* says BCL account manager Malcolm Jones. *"We hope so, certainly all the theory shows it should work but we just won't know until it is actually in place."*

"And unfortunately Coasters will have to wait a while longer yet for BCL's theory to be put to test, as the new antenna cannot be installed because the site is apparently too waterlogged. *"We'll have to wait until summer - we're aiming for the end of December/early January"* said Jones. With BCL's loose deadline running very close to the worst months for television reception - February to March - and their past record for sticking to deadlines, what do you think the chances are of good reception by this summer?"

Toshiba is joining competitors Sony and Sanyo in the electronic vehicle navigation market. Like the competitive models, Toshiba uses a 4" / 101mm LCD display, Global Positioning System (GPS) reference and CD ROM drive loaded with mapping in their package. Price will be in the range of NZ$4,300. Software continues to be a problem for sales outside of Japan as "CD ROM Maps" are only complete for the state of California; Florida is expected early in 1995.

"Point and shoot" on-screen television programme guide that automates channel selection and VCR scheduling has been demonstrated in US. Viewer sees full on screen "grid display" of programming, arranged in virtually any format (subject matter, title, alphabetical) the viewer wishes. System remembers which programme formats and programme categories viewer most often watches, highlights programmes of a similar or series nature on screen to increase opportunity for viewer to find and select those programmes. With four button remote control, viewer simply points at on-screen display moving icon to programme desired and "shoots." The unit then locates the programme of interest for display, or loads the VCR with record instructions for that programme as chosen. Package is being sold as after market add-on to existing TV receivers, sells for under NZ$175 per "box" and requires continuing "service connection" in range of NZ$8.75 per month to feed updated data into terminal memory. Viewers also have optional extra services available: Latest sport scores or customised AP + UPI services electronic newspaper, both in the range of NZ$3.75 per month.

Fuji Photo has introduced at NZ$1,750 new "Photo-Video Imager" which allows user to view 35mm negatives, slides, photo prints and printed materials on TV or computer screen. Unit has 410,000 pixel CCD image device, 2X zoom lens. Once images are into computer system, programmes exist to allow photo to be "manipulated" and stored or printed in revised format. "Photographic proof" of an event or item may be a thing of the past.

US home and business computer leader Compaq has significant "computer-based" combination PC and television receiver project underway. The firm is reported to be developing a home "box" that combines personal computing, television reception, CD (audio and video) playback and record and videogame machine functions.

CABLE/FIBRE TV

John Rutherford, entrepreneur behind the Greymouth "test cable TV service" operational since the start of the second quarter (1994) reports to CTD *"We will not begin charging users for this service until we have the programming side of the equation sorted."* Rutherford further explains that the patents he holds on the unique combination of 12 GHz microwave hub feeders to neighbourhood located microwave receiving dishes relates to the methodology of controlling which channels each customer receives. In traditional cable, the cable operator either provides an in-home set-top cable converter to tune the cable channels, or, provides a direct connection between the customer's TV receiver and the master cable lines. In each case, the cable company is able to selectively "filter out" specific channels not ordered (and paid for) by the customer either internally with the set-top cable converter's programming, or "passively" with channel traps installed outside of the home. In the Rutherford patents, this "controlling" of channels of service is accomplished at the neighbourhood microwave receiving system site with each customer gaining access to only the paid-for channels through remote interrogation of control equipment at each site. Rutherford claims his patents protect his system from replication by others without his permission and contract agreement to use his patented technology. More recently, the Greymouth cable system has approached the regional electrical power authority suggesting a joint power meter reading project using the cable system as a conduit for power meter interrogation.

Australian cable TV update: Scene six, act nine. Rupert Murdoch's News Corporation announced plans in mid-November to invest Australian $4B in a partnership with Australian Telecom to build a cable TV network using traditional coaxial cable plus fibre interconnections. The announcement claimed the service, under construction since Telecom announced its own plans last May, is already in front of 50,000 Australian homes, is growing with new cable laid inside existing Telecom ducting at a rate of 40,000 new potential homes per month. The actual launch of a service offering to the public was scheduled for "early in 1995." Prior to that announcement, Murdoch's News Corp had been aligned with a rival group, Optus Vision. Only one month prior to the Telecom announcement, Murdoch was reported telling his AGM that he had decided not to go ahead with the previously announced Australian cable TV plans. He is quoted as telling the AGM, *"There are too many players involved in the (promise of) Australian cable TV. That's why we left Optus or whatever it is called. I don't mean anything against Optus - don't get me wrong - but we just don't see any point in having a minor passive investment role and waiting ten years before we see a dividend."*

NEW HORIZONS PACIFIC STATIONS - WHAT TO EXPECT

This past May Horizons Pacific formally announced what many in the industry had suspected for some time; the "regional television" stations planned for Auckland, Hamilton, Wellington and Dunedin would be largely owned, run and operated by TVNZ. With the installation this month of 7m satellite dishes at the studios for Hamilton and Wellington (Auckland already has access to multiple TVNZ dishes), and an 8.5m moving ahead for Dunedin, "air day" is approaching.

These UHF stations will operate, they say, from 3PM to 12 midnight daily with programming from three primary sources: The TVNZ archives, the BBC, and local productions originating in each market. Each station will have coverage that approximates that of the SKY service (UHF) channels already serving each region.

TVNZ acquisition of the Horizons Pacific stations has never been significantly explained. TVNZ defends its control of the new regional stations by suggesting they will serve "minority interests" which are too small to justify national network time (and programme creation expenditures). TVNZ's Brent Harman, writing in the New Zealand Herald, blames New Zealand On Air funding procedures for the lack of minority interest programming on "national" television. Harman said, "(NZOA) *prefers to spend its funds on programmes which are going to be popular with viewers*," and, "*It is clearly NZ On Air's job to ensure that the tax collected for broadcasting goes in the pursuit of public viewing.*"

'Public viewing' clearly means mass appeal programming. From TVNZ's 1988 entry into profit-oriented commercial telecasting, the network has carefully planned how it would deal with competition. Part of that plan includes the purchase of overseas programming and from the day TV3 (and more recently SKY) came on the scene, TVNZ programme purchases have been largely guided by the fear that if they don't buy a certain programme, the competition might do so. After years of "defensive programme buying" TVNZ has ended up with a massive library of programmes which have no place or available air time on TVs 1 and 2. In the TV programme trade, popular programmes (Home Improvements) are "packaged" with one or more less popular programmes by the programme rights owners. If you want "Home Improvements," you must also purchase "Fluffy and the Kangaroo Kingdom" or some equally low grade material. The good stuff goes on the air, the poor stuff ends up on a shelf.

Horizons Pacific will end up with a significant share of the "Fluffy and the Kangaroo Kingdom" genre of programmes. It's there, on the shelf, paid for. Most of it is so bad, or so old, that the recently announced new series on SKY Orange Channel look positively appealing by comparison.

Will any of the HP programming satisfy minority programming interests? Minority ethnic interests? Will the Chinese population in Auckland and Wellington find several hours per day of ethnic programming available? Will there be Hindi programming? More Maori programming?

In all likelihood, no.

TVNZ saw in Horizons Pacific two ingredients they coveted: An opportunity to "dump" an archive filled with fluffy programming, and, an opportunity to get those small but vocal minorities that send letters to the newspapers and TV guides complaining about TVNZ programming off their backs. Commercially, they also saw a new way to tap into the public funding of television, and by putting their own "independent regional stations" on the air, the opportunity to pre-empt others who might wish to do the same thing.

How TVNZ handles these opportunities, and how the public responds, will bear watching in 1995.

Meanwhile, the original Telecom cable player, **Cable Television Services (CTS)** has been widely reported in the Australian business press as laying off staff members. CTS had secured rights from Telecom to lease 15 of the total 64 available (7 MHz analogue width) TV channels on the Telecom system; it had sought a total of 20 initially. CTS (see CTD: 9405, p.20) attempted to raise A$42m through a public stock float but institutional investors did not come to the party as had been hoped. As the curtain comes down on this month's CTS report, the firm is reported to be close to selling its assets back to Telecom less its closely held programming rights to the 1996 World Cup Cricket Series.

Under the **Telecom / Murdoch** (News) partnership, Murdoch's group will manage the programming much of which is likely to come from the News owned (US) Fox TV Network. Also likely is that when AsiaSat 2 is functional by July (1995) that the News Corporation Star TV free-to-air channels on As2 will find their way onto the Telecom - News Corp cable network.

The competition to Telecom, the "**Optus Group**" which includes the Seven and Nine TV networks as well as major US cable operator Continental Cablevision, has its own regulatory problems. The (Australian) Trade Practices

Commission is said to be opposing Seven and Nine participating in the "Optus Vision" venture out of fear of monopolisation of viewing choices by the established terrestrial networks. Further complicating this aspect of the Australian situation is the ownership of a chunk of Seven by News Corporation. Unlike Telecom which says it is ready to lease channel space to any "qualified" business provider (such as CTS turned out not to be), Optus will not allow "outside programming suppliers" onto its planned cable distribution systems "for a minimum of five, perhaps seven years." This means Optus is viable only if it is able, through its own partners, to create or secure programming which it controls on its network. They had at one time planned 24 channels initially. As best as can be determined at this time., Optus Vision is owned as follows: Optus Communications (35%), Continental Cablevision (30%), Nine Network (20%) and Seven Network (15%). As reported in CTD for November (p.32), Optus Vision, unable to secure underground "cable duct space" from Telecom, is negotiating to rent above ground pole space from local electrical boards. On November 11th, with no press announcement and attracting minimum attention from environmentalists who oppose adding new above ground cables to existing power pole lines, Optus Vision began installing traditional coaxial cable on poles in the outer Sydney suburb of Pendall Hill.

And finally, it may come down to which of the Australian cable TV pretenders can secure film rights to operate pay cable movie channels. All of the announced players have been courting Hollywood and European producers to secure film libraries to support pay movie service channels. Nine Network this past February invested A$165m to acquire a 30% share in minor-league Hollywood film maker Regency Enterprises; a hedge on obtaining "exclusive" movie product for Nine's multiple uses. What the cable TV promoters are apparently finding is that movie prices to Australian users are at the top end of the cost scale world-wide. Hollywood distributors typically have a non-US pricing scale for movies with six separate categories. Under each category appears a list of countries and the rate per movie per viewer charged for the films when sent to the respective countries. Australia on this list is all by itself; the maximum rate per movie per viewer of any location on earth. Why? Because some years back there were movie rights "bidding wars" between 7, 9 and 10 networks that drove the cost of movies to the top of the scale, and above. Now the would-be pay cable entrepreneurs must live with this legacy of exorbitant film pricing costs. Knowledgeable Australian media watchers are suggesting that if the film distributors stick to the over-the-air rates for movies for pay-TV, the ultimate costs to consumers for pay cable movies in Australia will end up being the highest in the world.

UK cable TV penetration shot ahead by 39.7% in the year end July 31; a total of 841,000 homes now subscribe to cable (versus 2,746,000 equipped with home satellite TV dish systems).

Singapore Cablevision, a joint project of the government owned (Singapore) International Media and US cable operator Continental Cablevision, has re-announced intentions to provide a 64 channel capacity cable TV system for the island nation "within the next four years." However, no near term activity is forecast for the system's implementation which would have a potential of 750,000 homes when completed. Government control of media continues in Singapore and ownership of private satellite dishes, while technically possible, is seldom practical under the bureaucracy that administers the "licensing" for the home dish systems.

NZ Telecom owner Bell Atlantic, in partnership with Nynex (New York telco) and Pacific Telesis (California telco), plan to create its own "interactive" television programming for delivery on fibre optic telephone plus video service lines is building two production studios; California and New York. The three companies reach 30,000,000 US homes with telephone service, will individually be adding Video Dial Tone (VDT) offerings.

TERRESTRIAL BROADCASTING

SKY Network's "response time" to the new "threat" of privately owned satellite TV dish systems, especially at motels and hotels, has been quick off the mark. Dishes installed at Southland motels in the past 60 days in lieu of adding SKY or in some instances in addition to adding SKY may be responsible for new aggressive selling stance of SKY commercial sales reps. By late in November SKY commercial reps were routinely advising motel clients "*On December 15th all satellite transmissions to New Zealand will be scrambled, the decoders will cost NZ$40,000 each and will only be available through SKY.*" The satellite dish industry's trade association, SPACE Pacific, followed down these totally incorrect statements and learned at least one SKY rep was basing his claims on the CNN announcements of the past 30 days regarding encryption of their (Indonesian) Palapa B2P service feed which is scheduled to take place on 15 December. SKY may be facing a more significant "threat" than the newly available PAS-2 services; the New Zealand motel association (MANZ) is canvassing members in at least one region (Hawkes Bay) to learn if members feel the SKY rates are "out of line" with economic realities. Currently most motels nation-wide using SKY are charged in the $6 per week per room region for SKY's 3 channel service although

"multiple-motel" rates as low as $3.50 per room per week are reported where one firm operates several motels and agrees to take SKY service at all units. SKY wants to increase rates for addition of the new "Orange" general service and Discovery channels and is pushing motels to commit for the new channels and renew their contracts at new 5 channel rates. In a letter dated 7 October SKY Commercial Manager Tony O'Brien told one motel owner: "*As a sign of SKY Television's commitment to working and building a long term relationship with commercial subscribers, we are prepared to provide the two new channels at no cost for a period until 31 December 1995.*" O'Brien went on to advise this motel owner his costs for Discovery and Orange channels, after 31 December 1995, would amount to a "*small premium of between 2 and 5% of the 3 channel rate.*" SKY probably has an eight month window of "grace" ahead without fear of major competition from satellite services while the shortage of compressed digital video (CDV) satellite receiving equipment sorts out. By September (1995) SKY will face the ability of satellite installers to deliver a host of new channels to motels for rates lower than SKY (down to no charge per channel except for equipment when using the after-July-available AsiaSat 2 seven channel service), combined with the ability to deliver the new CDV receiving equipment "ex-stock." In the interim, look for SKY to sharpen their "marketing skills" and step-up the semantics attack on the alternate "satellite delivered" services. See further report in SatFACTS MONTHLY for December 15.

SKY chief operating officer John Fellet in an interview in a New Plymouth newspaper has assured the residents of New Plymouth "*Your community is the next priority.*" Similar statements have been made to residents of Whangarei (see CTD: 9409; p.10). Fellet told the North Taranaki Weekender "*We are still pushing for a transmitter site on Mt. Egmont but we are not confident it will happen. We have been offered an alternative site on Mt. Motoura Domain by BCL, however this would only provide transmission to the (New Plymouth) City area and not the whole of Taranaki.*" Fellet also voiced his oft-repeated warning to residents to "be patient" for the eventual arrival of SKY and suggested they not engage "*non-contract (*to SKY) *aerial installers to erect expensive, oversized antennas*" to attempt direct pickup of the distant signals from the Waikato or Palmerston North regions.

SKY's satellite feed of the US based Discovery Network is scheduled to be passed on to terrestrial viewers starting December 26. To date, the PAS-2 feed of this service has not appeared but is expected at any time. SKY's use of the Discovery Channel service will actually complicate SKY's attempt to "control" Discovery programming to other New Zealand outlets since Discovery will launch four brand new programming channels to compliment its basic service by July 1995. With a single terrestrial channel dedicated to Discovery in New Zealand, SKY will at best be able to utilise 20% of the total Discovery output, leaving plenty of unused material for others to use here without conflict to the SKY rights agreement.

Action TV Trackside in a newspaper supplement published in many sections of New Zealand is urging viewers to have a go at receiving their signal even if beyond normal reception range. The advertisement said, "*Even if viewers are outside the coverage areas indicated in our maps* (published with the advertisement)*, it's worth trying to tune in. Reception will be possible outside the boundary lines and will vary in quality. In Wanganui, for example, some people will be able to pick up a signal from the Manawatu transmitter.*" In the accompanying map "future expansion areas" include Whangarei, New Plymouth and Taupo on North Island.

Horizons Pacific four "regional television stations" (Auckland, Hamilton, Wellington and Dunedin) are pointing at a February 1st test-start for at least the three North Island outlets. The delivery of BBC programming, via satellite and compressed digital video, using the lower 18MHz of TVNZ's 180E transponder, will be direct to each station (Hamilton, Wellington and Dunedin) via their own satellite dishes. **Pacific Antennas** (Whangaparoa) has supplied the 7m antenna to Hamilton and is freighting an identical antenna to Wellington this week. An 8.5m antenna is being studied for Dunedin. The Pacific Antenna dishes have a novel rear leg motor driven elevation drive which will be commanded by a receiver that tracks the received signal strength of a selected 180E carrier as a guide to direction and speed of movement for the 511 satellite in its inclined orbit path. Simultaneous to the test-start of the Horizons Pacific properties, TV1 is scheduled to expand to 24 hours daily by adding BBC World Service TV programming through the night between normal close down and normal sign on. TV2 began seven day per week 24 hour operation October 22nd.

New Zealand On Air (NZOA) has approved, as predicted (CTD: 9409, p.35), the extension of TV3 service into the last major portion of New Zealand lacking such service. Funds for the expansion will allow 1996 construction of TV3 transmission facilities to serve 27,097 "new" viewers located along the western coast of South Island (Westport, Greymouth, Hokitika et al). TV3 claims to be talking with SKY TV concerning a jointly funded microwave link to carry TV3 from the Christchurch area over the Southern Alps to the western coastal region. When all of its present expansions are completed, TV3 will claim a reach to 94% of New Zealand viewers.

Ministry of Commerce has released its Radio Frequency Spectrum Tender 6 bid documents early (November 28th) and bids on new UHF television, FM and AM broadcast frequencies will close on the 10th of February (4PM) in Wellington. The original list of locations to be tendered (CTD: 9411, p.33) was modified in the final release eliminating 1 UHF TV, 2 FM and 4 AM (band) stations from the tender list. Bids must be on the prescribed form, must follow the written instructions and adhere to procedural statements found in the tender release document. Bid documents are $112.50 per package and may be obtained from your local Radio Operations Group (Ministry of Commerce) field office. Details and discussion from C.F. Underwood (Tender Manager) in Wellington at 04-474-2961.

UK Channel 4 has begun transmissions in the widescreen PALplus format with 500 hours of programming scheduled by the end of 1995. Channel 4 joins two German networks and a Swiss network who launched widescreen PALplus earlier this year. The system uses 16:9 aspect ratio with a reduction in active lines from the normal 576 to 432. At the TV set the PALplus decoder expands the 432 line video using high frequency information transmitted during the 144 blanked lines to create a picture of both the correct aspect ratio (16:9) and slightly enhanced resolution from a standard PAL signal.

Ireland is following the lead of the UK and many other European nations, and abandoning (VHF) band I and III channels in favour of a national UHF only policy. A new national network, Telefis na Gaeilge, is now building a national transmitter chain (all UHF) and as the new sites come on line established RTE-1 and -2 will have UHF outputs installed at each site top begin phasing out of the VHF transmitters.

Canada's much admired CBC national state-operated television network is slicing 1,000 of 9,000 jobs and agreeing to increase Canadian created programme content to 95% from present 86% in return for government funding bailout of US$180m budget shortfall. CBC receives majority of annual budget from government, only small portion from advertising, and much of that is built around US and UK programmes shown in prime time. By dropping popular imported programming, advertising revenues are expected to plummet since Canadian productions seldom attract large audiences.

Japanese television networks are opposing US audience measurement firm Nielsen's plans to provide detailed data on make-up of audiences. Present Japanese audience rating system tells stations (and advertisers) only which channels are being watched, at what times. Nielsen will provide additional data covering audience age and sex of viewers. Stations say this information will place "too much control of advertising sales in hands of advertisers who will demand commercials be placed in specific programmes based upon audience profiles." In existing system, stations place commercials as they see fit, honour specific programme placement requests only through "special arrangements." Nielsen, US based, is responding to rapid growth of satellite TV delivery into South America and is opening audience measurement facilities in Argentina, Brazil, Columbia and Ecuador in 1995.

Channel 51 Ltd. is newest Kiwi telecaster. Station covers Hawkes Bay region, programmes tourism information for distribution through local motels on 20 minute self-repeating 'loop.'

Skywave Interference Report: Australian channel 0 (same as our channel 1) TV signals began pouring into western coastal areas of New Zealand earlier than normal; this follows an unusually intense period of abnormal skywave interference during June of this past winter (CTD: 9407, p.49). Significant disruptions to western viewing on channels 1, 2 and 3 was reported for as long as six continuous hours on November 6, 7, 10, 12, **13**, 14, 15, 17, 18, 19, **20**, 21, 22, **23**, 24, 25, 26, **27** and December 02, **03** and **04**. Bold face indicates dates with skywave interference lasting more than one hour with strength sufficient to "wipe out" reception from a New Zealand channel 1 transmitter 5km or more distant. The worst is yet to come: Traditionally the skywave interference peaks between mid-December and mid-February, typically between the hours (NZT) of 9AM and 2PM, 6PM and 9PM with peak days exceeding 10 hours of continuous reception. Reports here courtesy of individual observations by licensed observers at Greymouth, New Plymouth, Auckland west coast and Kaitaia.

NEXT ISSUE OF CTD

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NEXT ISSUES OF SatFACTS MONTHLY

January 13, 1995

February 15, 1995 (*)

*/ SatFACTS MONTHLY becomes full-sized magazine with February 1995 issue